XRS

X-RAY SPECTROMETRY

1979 Volume 8

HEYDEN

XRS

X-Ray Spectrometry

AN INTERNATIONAL JOURNAL

Official medium of publication of the Microbeam Analysis Society

EDITOR-IN-CHIEF

RON JENKINS
26 Second Street, Quarry Acres, Peekskill, New York 10566, USA
Tel (201) 529 3800 (Office)

REGIONAL EDITORS

Australia
Dr K. NORRISH
C.S.I.R.O., Division of Soils, Private Bag No. 1, P.O., Glen Osmond, S. Australia 5064

France
Dr R. TERTIAN
119 Avenue Emile Zola, 75015 Paris, France

Japan
EICHII ASADA
National Chemical Laboratory for Industry, 1-1-5 Honmachi, Shibuya-ku, Tokyo, Japan

Netherlands
Drs J.L. de VRIES
N.V. Philips Gloeilampenfabrieken, Application Laboratories, Scientific Equipment, T.Q.IIIp, Eindhoven, Netherlands

Scandinavia
Dr L. BÄCKERUD
Expectron AB, Artemisgatan 14, Box 39033, S-100 54 Stockholm 39, Sweden

South Africa
Dr A. STRASHEIM
Director, National Physical Laboratory, CSIR, P.O. Box 395, Pretoria, Republic of South Africa

United Kingdom
Dr G.L. HENDRY
Department of Geological Sciences, University of Birmingham, Birmingham B15 2TT, England

U.S.S.R.
Dr N. KOMYAK
X-Ray Institute, 1 Stakhanovtsev Street, 195112 Leningrad, USSR

ADVISORY BOARD

Professor J.D. Brown *University of Western Ontario, Canada*

Professor H. Chessin *State University of New York at Albany*

J.F. Croke *Philips Electronic Instruments, USA*

Professor H. Ebel *Institut f. Technische Physik Hochschule, Austria*

Professor K. Fujimori *University of Sao Paulo, Brazil*

Dr D. Gedcke *Ortec Inc., Oak Ridge, Tennessee, USA*

Professor R.W. Gould *University of Florida, USA*

P.W. Hurley *Pye-Unicam Ltd, England*

M.A. Kemper *Coordenação Projetos Siderúrgicos, Brazil*

G.L. Kerrigan *Western Australia Institute of Technology*

Dr E. Lifshin *General Electric Co., USA*

Mr P. Lublin *GTE Laboratories, Massachusetts, USA*

Mr J. Lucas-Tooth *Telsec Instruments, England*

Professor B. Post *Polytechnic Institute of Brooklyn, USA*

J. R. Rhodes *Columbia Scientific Industries, Texas, USA*

Professor F. Rinaldi *Montecatini Edison S.p.A., Italy*

Dr C.O. Ruud *University of Denver, USA*

D.F. Sermin *Applied Research Laboratories, Switzerland*

GENERAL INFORMATION

Published quarterly, one volume per annum, at:
Spectrum House, Hillview Gardens, London NW4 2JQ, UK

Printed in the United Kingdom by Adlard & Son Ltd,
Bartholomew Press, Dorking, Surrey

© Heyden & Son Ltd, 1979. All rights reserved.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of Heyden & Son Ltd.

Microform editions: Fiche: with or in place of paper issues; Film: 16 mm available at the end of each year. Further details and prices from the publisher
Back issues Vols. 1–7 available

CCC – Copyright Clearance Center

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center Inc., PO Box 765, Schenectady, New York 12301, USA (Tel: (212) 697 2525); for copying beyond that permitted by Sections 107 or 108 of the US Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

HEYDEN & SON Ltd, Spectrum House, Hillview Gardens, London NW4 2JQ, UK (Tel: 01-203 5171; Telex: 28303)
HEYDEN & SON Inc., 247 South 41st Street, Philadelphia, PA 19104, USA (Tel: (215) 382 6673; Telex: 831769)
HEYDEN & SON GmbH, Münsterstrasse 22, 4440 Rheine, West Germany (Tel: (05971) 55111; Telex: 981630)

Contents of Volume 8

NUMBER 1 JANUARY 1979

Editorial *1*

A Fast and Simple Procedure for the Evaluation of Net Intensities from Energy-dispersive X-Ray Spectra
S. EKELUND, A. THURÉN AND T. WERLEFORS *2*

A Comparison of the Transmission Properties of 1 μm and 6 μm Polypropylene Flow Counter Windows
A. SEAMAN *7*

Loss of Sulphur During Irradiation of X-Ray Spectrometric Standards Prepared Using Cellulose and Poly(vinyl alcohol)
R.T. KING *9*

An X-Ray Fluorescence Method for Coating Thickness Measurement
S.K. JAIN, P.P. GUPTA AND A.C. EAPEN *11*

A Method of Correction for Absorption Matrix Effects in Samples of 'Intermediate' Thickness in EDXRF Analysis
A. MARKOWICZ *14*

The Bragg Reflection Integral for Pentaerythritol
R. HALL, M. LEWIS, B. LEIGH AND K. EVANS *19*

Quantitative Energy-dispersive X-Ray Analysis of Transition Elements in Aluminium Alloys, at Concentrations of Less Than 1%
R. MORA *27*

Instrumental Interferences in X-Ray Fluorescence Analysis of Thin Samples
N.A. BONNER *30*

A Non-linear Least Squares Fitting Routine for Optimizing Empirical XRF Matrix Correction Models
W.N. SCHREINER AND R. JENKINS *33*

Response Functions for the Quantitative Evaluation of Compromise Conditions for Multi-element Analysis with Energy-dispersive X-Ray Fluorescence Spectrometry
W. WEGSCHEIDER, B.B. JABLONSKI AND D.E. LEYDEN *42*

NUMBER 2 APRIL 1979

Editorial *51*

The Atomic Number $Z = 0$: Loss and Gain on Ignition in XRF Analysis Treated by the JN-Equations
W.K. DE JONGH *52*

Totalreflexions-Röntgenfluoreszenzanalyse
P. WOBRAUSCHEK UND H. AIGINGER *57*

The PIXE Facility at Eindhoven University of Technology
J.A. VAN DER HEIDE, H.P.M. KIVITS AND D.C. BEUZEKOM *63*

Escape Peak Losses in Si(Li) Detectors
P. SIOSHANSI AND A.S. LODHI *65*

X-Ray Fluorescence Analysis in the X-Ray Region of 0.4 to 7 nm: Application to Determination of Fluorine in Slags
K. SATO, I. TANAKA AND T. OTSUKI *68*

A Fundamental Parameter Method for Analysis of Alloys by Isotope-excited X-Ray Fluorescence
M. KIS-VARGA *73*

Determination Without Standards of Small Amounts of Metal Compounds on Microfilters by X-Ray Fluorescence Spectrometry
K. OHNO, J. FUJIWARA AND I. MORIMOTO *76*

Deconvolution of Energy-dispersive X-Ray Peaks Using the Poisson Probability Function
C.O. INGAMELLS AND J.J. FOX *79*

New Basic Empirical Expression for Computing Tables of X-Ray Mass Attenuation Coefficients
T.P. THINH AND J. LEROUX *85*

Empirical Method of Matrix Effect Elimination for Samples of 'Intermediate' Thickness in EDXRF Analysis
B. HOŁYŃSKA AND A. MARKOWICZ *92*

© Heyden & Son Ltd, 1979

CONTENTS OF VOLUME 8

NUMBER 3 JULY 1979

Editorial *95*

Influence of Divergence of the Primary Radiation Beam on the Line Intensity of the X-Ray Fluorescence Spectrum
G.V. PAVLINSKY AND B.I. KITOV *96*

A Technique for the Analysis of Odd-shaped Samples by Means of X-Ray Fluorescence Spectrometry
F.T. WYBENGA *102*

Linear and Non-linear Peak Fitting in Energy-dispersive X-Ray Fluorescence
H. NULLENS, P. VAN ESPEN AND F. ADAMS *104*

Optimization of a Spectrometer for Energy-dispersive X-Ray Fluorescence Analysis by X-Ray Tubes in Combination with Secondary Targets for Multielement Determination
R. SPATZ AND K.H. LIESER *110*

X-Ray Secondary Fluorescence in Matrix Correction
R. PLESCH *114*

X-Ray Spectrometric Analysis by Fusion Methods. A Simple Procedure for Determining Effective Influence Coefficients
R. TERTIAN *117*

Utilisation du Rayonnement Primaire Diffusé par l'Echantillon pour une Détermination Rapide et Précise des Eléments Traces dans les Roches
R. VIÉ LE SAGE, J.P. QUISEFIT, R. DEJEAN DE LA BÂTIE ET J. FAUCHERRE *121*

Determination of Tungsten in Ores, Concentrates and Plant Process Materials Using Internal Standard X-Ray Fluorescence Spectrophotometry
A.M. HARRIS AND D.N. HINGLE *129*

X-Ray K-Absorption Edge of Bromine in Some Cobalt Complexes
A. KUMAR AND A.N. NIGAM *135*

Short Communication

The Application of a 100 kV X-Ray Tube to Topographic Research
S.A. IVANOV AND J.A. SHCHUKIN *138*

Calibration Standards *140*

NUMBER 4 OCTOBER 1979

Editorial *145*

Comparison between Experimental and Calculated Relative Escape Peak Intensities for an Intrinsic Ge Detector in the Energy Region 11–25 keV
L.H. CHRISTENSEN *146*

Element Mapping by a Scanning X-Ray System
N. GURKER *149*

Trace Analysis of Estuarine Brown Algae by Energy-dispersive X-Ray Fluorescence
L. SAUTER, D. VAN DER BEN AND R. VAN GRIEKEN *159*

Prediction of Mass Absorption Coefficients from Inelastically Scattered X-Radiation for Specimens of Less than 'Infinite Thickness'
R. KIESER AND T.J. MULLIGAN *164*

An Estimation of Selected Methods for the Correction of Interelement Effects in X-Ray Fluorescence Analysis
W. STANKIEWICZ AND G. SANNER *169*

Ion-implanted Reference Standards for the Analysis of Surface Impurities by X-Ray Fluorescence Spectrometry
W.H. GRIES AND F.T. WYBENGA *175*

Quantitative Volumetric Determination of Gamma-2 Content in Dental Amalgam by Electron Microprobe Analysis
R.W. BRYANT AND K.J. MORAN *180*

X-Ray Production by 11–27 MeV Alpha Particles
T. BĂDICĂ, C. CIORTEA, A. PETROVICI AND I. POPESCU *186*

The Family of Alpha Coefficients in X-Ray Fluorescence Analysis
G.R. LACHANCE *190*

Visual CRO Display of Pulse Height Distribution Including Discriminator Setting for a Single Channel X-Ray Analyser
S.E. SHAW *196*

Short Communication

Retardation of Ammonium Acid Phthalate Crystal Surface Decomposition
D.M. BARRUS AND R.L. BLAKE *199*

Calibration Standards *200*

© Heyden & Son Ltd, 1979

Author Index to Volume 8

Adams, F. *104*
Aiginger, H. *57*

Bădică, T. *186*
Barrus, D.M. *199*
Ben, D. Van der *159*
Beuzekom, D.C. *63*
Blake, R.L. *199*
Bonner, N.A. *30*
Bryant, R.W. *180*

Christensen, L.H. *146*
Ciortea, C. *186*

Dejean de la Bâtie, R. *121*

Eapen, A.C. *11*
Ekelund, S. *2*
Espen, P. Van *104*
Evans, K. *19*

Faucherre, J. *121*
Fox, J.J. *79*
Fujiwara, J. *76*

Grieken, R. Van *159*
Gries, W.H. *175*
Gupta, P.P. *11*
Gurker, N. *149*

Hall, R. *19*
Harris, A.M. *129*
Heide, J.A. van der *63*
Hingle, D.N. *129*
Hołyńska, B. *92*

Ingamells, C.O. *79*
Ivanov, S.A. *138*

Jablonski, B.B. *42*
Jain, S.K. *11*
Jenkins, R. *33*
Jongh, W.K. de *52*

Kieser, R. *164*
King, R.T. *9*
Kis-Varga, M. *73*
Kitov, B.I. *96*
Kivits, H.P.M. *63*
Kumar, A. *135*

Lachance, G.R. *190*
Leigh, B. *19*
Leroux, J. *85*
Lewis, M. *19*
Leyden, D.E. *42*
Lieser, K.H. *110*
Lodhi, A.S. *65*

Markowicz, A. *14, 92*
Mora, R. *27*
Moran, K.J. *180*
Morimoto, I. *76*
Mulligan, T.J. *164*

Nigam, A.N. *135*
Nullens, H. *104*

Ohno, K. *76*
Otsuki, T. *68*

Pavlinsky, G.V. *96*
Petrovici, A. *186*
Plesch, R. *114*
Popescu, I. *186*

Quisefit, J.P. *121*

Sanner, G. *169*
Sato, K. *68*
Sauter, L. *159*
Schreiner, W.N. *33*
Seaman, A. *7*
Shaw, S.E. *196*
Shchukin, J.A. *138*
Sioshansi, P. *65*
Spatz, R. *110*
Stankiewicz, W. *169*

Tanaka, I. *68*
Tertian, R. *117*
Thinh, T.P. *85*
Thurén, A. *2*

Vié le Sage, R. *121*

Wegscheider, W. *42*
Werlefors, T. *2*
Wobrauschek, P. *57*
Wybenga, F.T. *102, 175*

© Heyden & Son Ltd, 1979

Heyden & Son Ltd, Spectrum House, Hillview Gardens, London NW4 2JQ, UK (Tel: 01-203 5171; Telex: 28303)